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STAFFELLITE, FROM PIKE'S PEAK, COL.

BY E. GOLDSMITH.

On a specimen of the well-known Amazon stone from Pike's Peak, an incrustation from 4 to 6 millimetres thick was shown for inspection, by Mr. Foot, to the members of the Mineralogical Section. It was given to me for determination, and the results are as follows:

On the upper surface it appears rather flatly mammillary massive, chalcedony or agate-like. If broken with the hammer, the fresh fracture has a silky lustre, due to a microcrystalline structure, which is clearly seen if a thin splinter of it is placed beneath the microscope, having mounted an objective of 1¾ inches. The fracture, which is somewhat splintery, but smooth, has a pale gray color; on the upper surface, where the mineral had been exposed, the color appears leek-green, and is rough to the touch.

Hardness = 3.5 Specific gravity = 2.959.

Blowpipe reactions: in the forceps, it swells up at first, then decrepitates; the color of the flame is orange-yellow.

Hydrochloric acid dissolves it with slight effervescence of carbonic acid gas to a perfectly clear solution. In the solution was found lime and phosphoric acid, and also some soda.

The quantitative analysis was performed on 0.500 gram. of substance. I obtained 0.6405 gram. of sulphate of lime, anhydrous = 52.74 per cent. of lime. Also 0.317 gram. of pyro-phosphate of magnesia = 40.55 per cent. of phosphoric acid; finally, 0.0335 gram. of anhydrous sulphate of soda = 2.92 per cent. of caustic soda. A sample of the powdered mineral was heated from 230° to 240° F. without losing any weight. The amount of carbonic acid was calculated to saturate the surplus lime and also the soda.

The surplus lime = 4.77 per cent., requires 3.74 per cent. $\ddot{C}$.
To the soda = 2.92 " " " 2.07 " " $\ddot{C}$.

From these considerations it would seem probable that the composition of the Staffellite from Pike's Peak, like the one described by Stein in Germany, do not differ much from each other.

Putting the analytical results together, it reads:

$3\,\dot{\mathrm{C}}\mathrm{a},\ \overset{\cdot\cdot\cdot\cdot\cdot}{\bar{\mathrm{P}}} = 88.52$ per cent. Mol. $= 0.571$ or 6.
$\dot{\mathrm{C}}\mathrm{a},\ \ddot{\mathrm{C}} = 8.51$ " " " $= 0.170$ or 2.
$\dot{\mathrm{N}}\mathrm{a},\ \ddot{\mathrm{C}} = 4.99$ " " " $= 0.094$ or 1.

From the ratios, the following formula may be deducted:

$$[6\,(3\dot{\mathrm{C}}\mathrm{a},\ \overset{\cdot\cdot\cdot\cdot\cdot}{\bar{\mathrm{P}}}),\ 2\,(\dot{\mathrm{C}}\mathrm{a}\ddot{\mathrm{C}}),\ (\dot{\mathrm{N}}\mathrm{a}\ddot{\mathrm{C}})] = 1083.$$

This requires $3\,\dot{\mathrm{C}}\mathrm{a},\ \overset{\cdot\cdot\cdot\cdot\cdot}{\bar{\mathrm{P}}} = 85.87$ per cent.
$\dot{\mathrm{C}}\mathrm{a},\ \ddot{\mathrm{C}} = 9.23$ " "
$\dot{\mathrm{N}}\mathrm{a},\ \ddot{\mathrm{C}} = 4.89$ " "